

XIII. A NEW SPECIES OF HELODUS.

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Helodus comptus, sp. nov.

Description. — Teeth of moderate size, laterally elongated, having the coronal contour gently arched without rising into a distinct prominence, and the general surface wrinkled by a numerous series of fine transverse corrugations which extend over the entire superficies between the long lateral margins without being interrupted by a longitudinal crest. Punctations of the coronal surface confined to and apparently determining the linear arrangement of the transverse rugæ. The root is apparently short, reaching but little below a narrow smooth band at coronal base along the lateral margins, and coarsely crenulated as in some species of *Chomatodus*. Transverse rugæ becoming more or less obliterated in worn specimens, and punctæ appearing as rather conspicuous pores.

The above definition is intended to express the more salient characteristics of a number of detached Cochliodont teeth from the Waverly of northern Pennsylvania, recently submitted to the writer for investigation by Mr. William Millward of Meadville. Although the generic relations of these anterior teeth are necessarily somewhat uncertain, there can be no doubt that they are specifically distinct from all forms of Cochliodont dentition hitherto described, and considerable interest centers, therefore, in their discovery. The majority of dental crowns are well preserved, the roots imperfectly so. They present little individual variation, but show among themselves different effects of wear. The largest specimen in the collection has a total length of slightly less than 2 cm., and breadth of 0.7 cm. In smaller specimens the dental crown is proportionally somewhat wider.

Different types of the anterior dentition of Cochliodont sharks are commonly assigned to various genera whose status must be regarded as purely provisional: such, for instance, as *Helodus* (exclusive of *H. simplex*), *Chomatodus*, *Lophodus*, *Venustodus*, in which the lenticular crowns cannot be correlated with the large posterior grinding plates of well recognized forms. It happens, moreover, that the anterior

teeth of *Psephodus*, *Cochliodus* and possibly still other forms are generically indistinguishable from those of *Helodus*; and as shown by Dr. Traquair, the teeth described as "*Helodus*" *planus* and "*Lophodus*" *didymus* belong to the mouth of one and the same fish, that to which Agassiz first gave the name of *Cochliodus magnus*, and now known as *Psephodus magnus*.¹ In the same way the present writer has been able to identify the arched series of teeth named *Helodus coxanus* by Newberry as representing in reality the symphysial dentition of *Cochliodus latus* Leidy.²

In view of these considerations there are at present no valid means for determining the precise relations of either the teeth which are here regarded as a new species of "*Helodus*," or those which accompany the new form in the same horizon and locality, previously made known by Newberry under the title of *H. gibberulus*. From other provisional species of *Helodus* and *Chomatodus* the form under discussion is distinguished by its transversely wrinkled coronal surface, without either a longitudinal elevation or median prominence. From *Orodus* and its congeners, on the other hand, it differs in that the transverse rugæ are not interrupted by a longitudinal crest or furrow, as well as by the absence of median elevations.

Horizon and Locality. — Meadville upper limestone (base of the Waverly); Cemetery ravine, Meadville, Pennsylvania. Collected by Mr. William Millward, of Peking, China, to whom thanks are due for the privilege of studying the typical material.

¹ *Trans. Geol. Soc. Glasgow* (1884), Vol. VII, p. 396; also *Geol. Mag.* (1885), dec. 3, Vol. II, p. 344.

² *Amer. Nat.* (1900), Vol. XXXIV, p. 582, and *Bull. Museum Comp. Zool.* (1903), Vol. XXXIX, p. 203.